

THAT WHICH IS CLAIMED IS:

1. An integrated circuit for use with a smart card and operative in both an ISO mode in accordance with the International Standards Organization 7816 (ISO 7816) protocol, and a non-ISO
5 mode in accordance with a non-ISO protocol comprising:
 - a microprocessor;
 - a switching block connected to the microprocessor; and
 - an external interface connected to the10 switching block and comprising an ISO port having a serial interface and operative for communicating in an ISO mode when a ISO mode is detected and a non-ISO port operative for communicating in a non-ISO mode when a non-ISO mode is detected, wherein said microprocessor
15 and switching block are operative for configuring the ISO port to allow debugging and/or software development through the serial interface of the ISO port in a non-ISO mode and allow debugging and/or software development through the non-ISO port in an ISO mode.
2. An integrated circuit according to Claim 1, wherein said non-ISO mode comprises a USB mode and said non-ISO port comprises a USB port.
3. An integrated circuit according to Claim 1, and further comprising a mode configuration circuit connected to the switching block for configuring the dual-mode integrated circuit in one of the ISO or non-
5 ISO modes.
4. An integrated circuit according to Claim 3, wherein said dual-mode configuration circuit is

operative for detecting a non-ISO mode or ISO mode upon a power-on-reset.

5 5. An integrated circuit according to Claim 1, wherein said serial interface of the ISO port comprises an I/O contact through which debugging and/or software development occurs when configured in non-ISO mode.

6. An integrated circuit according to Claim 5, wherein said serial interface further comprises reset and clock contacts.

7. An integrated circuit according to Claim 1, and further comprising a circuit for disabling one of the non-ISO port or ISO port used for debugging and/or software development after debugging and/or software development is completed.

8. A dual-mode smart card operative in both an ISO mode in accordance with the International Standards Organization 7816 (ISO 7816) protocol, and a USB mode in accordance with a USB protocol comprising:

5 a card body;

 a dual-mode integrated circuit carried by the card body and comprising,

 a microprocessor;

 a switching block connected to the

10 microprocessor;

 a first set of contacts forming an ISO port and including serial I/O, clock and reset contacts used in an ISO mode when a ISO mode is detected; and

 a second set of contacts forming a USB port

15 and including D+ and D- contacts used in a USB mode when a USB mode is detected, wherein said

microprocessor and switching block are operative for configuring the ISO port to allow debugging and/or software development through the ISO port in a USB mode
20 and to allow debugging and/or software development through the USB port in an ISO mode.

9. A dual-mode smart card according to Claim 8, and further comprising a mode configuration circuit connected to the switching block for configuring the dual-mode integrated circuit in one of
5 the ISO or non-ISO modes.

10. A dual-mode smart card according to Claim 9, wherein said dual-mode configuration circuit is operative for detecting a USB mode and ISO mode upon a power-on-reset.

11. A dual-mode smart card according to Claim 8, wherein the reset contact is switched and deselected and the clock and I/O contacts maintained available at a power-on-reset when a USB mode is
5 detected.

12. A dual-mode smart card according to Claim 8, and further comprising a latch circuit that latches a mode signal as a control signal for switching and deselecting the reset contact in a USB mode for
5 debugging and/or software development through the ISO port.

13. A dual-mode smart card according to Claim 12, and further comprising a status register for storing a mode bit operative for jumping to a USB protocol.

14. A dual-mode smart card according to Claim 8, and further comprising a circuit for disabling one of the USB port or ISO port used for debugging and/or software development after debugging and/or
5 software development is completed.

15. A dual-mode smart card according to Claim 8, wherein said switching block is operative for switching the reset pin and maintaining the clock and ISO pin in the USB mode for debugging and/or software
5 development through the ISO port.

16. A method of operating a dual-mode integrated circuit for use with a smart card and operative in both an ISO mode in accordance with the International Standards Organization 7816 (ISO 7816)
5 protocol, and a non-ISO mode in accordance with a non-ISO protocol comprising the steps of:

detecting a non-ISO mode or ISO mode of operation; and

10 configuring the dual-mode integrated circuit for communicating through an ISO or non-ISO port in respective ISO or non-ISO modes of operation and debugging and/or development through a serial interface of the ISO port when a non-ISO mode has been detected and debugging and/or software development through the
15 non-ISO port when an ISO mode has been detected.

17. A method according to Claim 16, wherein the non-ISO mode comprises a USB mode and the non-ISO port comprises a USB port.

18. A method according to Claim 16, and further comprising the step of debugging through a

serial I/O contact of the ISO port when the configured in the non-ISO mode.

19. A method according to Claim 16, and further comprising the step of detecting a non-ISO mode or ISO mode at a power-on-reset.

20. A method according to Claim 16, and further comprising the step of disabling one of the ISO port or non-ISO port through which debugging and/or software development has occurred when debugging and/or
5 software development is completed.

21. A method of operating a dual-mode smart card operative in both an ISO mode in accordance with the International Standards Organization 7816 (ISO 7816) protocol, and a USB mode in accordance with a USB
5 protocol comprising the steps of:

detecting a USB mode or ISO mode of operation; and

configuring a switching block operative with an ISO port comprising a first set of contacts
10 including serial I/O, clock and reset contacts used in an ISO mode, and a USB port comprising a second set of contacts including D+ and D- contacts used in the USB mode to allow debugging and/or software development through the serial I/O contact when a USB mode has been
15 detected and debugging through the USB port when an ISO mode has been detected.

22. A method according to Claim 21, and further comprising the step of detecting a USB mode or ISO mode at a power-on-reset.

23. A method according to Claim 21, and further comprising the step of switching the reset contact and maintaining clock and I/O contacts available at a power-on-reset when a USB mode is
5 detected.

24. A method according to Claim 21, and further comprising the step of latching a mode signal as a control signal for deselecting the reset contact.

25. A method according to Claim 21, and further comprising the step of reading a mode bit in a status register and jumping to the use of any USB code operative in the microprocessor.

26. A method according to Claim 21, and further comprising the step of enabling a USB components for attaching the smart card to a USB bus.

27. A method according to Claim 21, and further comprising the step of disabling one of the ISO port or USB port used during debugging and/or software development after debugging has been completed for
5 enhancing security.

28. A method according to Claim 27, and further comprising the step of reporting the disabling of one of the ISO port or USB port after debugging and/or software development by a status bit within a
5 status register.

29. A method according to Claim 21, and further comprising the step of selecting an ISO mode and connecting the USB port to a USB bus for debugging.

30. A method according to Claim 21, and further comprising the step of reading a first control bit for powering a USB peripheral block and reading a second control bit and enabling a USB peripheral block.